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ment paper is covered with the fluorescing substance, and the shadows produced by the X-rays may be directly seen. The instrument has the general form of a stereoscope. Mr. Edison uses tungstate of calcium, with which it is said it is possible to see the shadow through three feet of cork.

M. BECQUEREL has reported to the Paris Academy that he has found that potassium uranyl sulphide when excited to phosphorescence gives rise to rays which last many hours (more than 160) after the phosphorescence ceases, and pass through paper aluminium and copper. They also discharge electrified bodies in a manner similar to the X-rays.

A SERIES of field lessons on 'Birds in the Bush' will be given by Mr. Ralph Hoffmann, of Belmont, Mass., on Saturday mornings of April, May and June, in the neighborhood of Cambridge and Arlington, Mass. The object of the course is to indicate the easiest means of distinguishing the common birds native to this region, and the more interesting of the migrants. The songs of the different species, their favorite haunts, their feeding habits, and the sites chosen for their nests, will be studied. Before each walk, skins of the birds likely to be found will be examined. By beginning about the middle of April students may learn many of our common birds before the rush of migrants in May, and by continuing into June may pursue the study of our native birds after the migrants have passed.

A COMMITTEE from the New York Chamber of Commerce has been organized to promote the efficiency of the medical library in the New York Academy of Medicine. An attempt is being made to collect \$100,000 for the library. The library of the New York Academy of Medicine is one of the most complete in the world and is open, without charge, to all wishing to use it.

MM. A. AND L. LUMIÈRE have invented an improvement on Edison's kinetoscope, which they call a cinematograph. With this instrument changing scenes are exhibited in their natural size on a screen. The groups, such as a crowd of people passing along the street or a railway train entering and stopping at a station,

are said to be very effective. Some nine hundred instantaneous photographs are taken in the course of a minute, and when these photographs are thrown on a screen by means of the electric light at the same rate and order as they were taken an exact reproduction of the moving people is obtained.

THE University of the State of New York has recently issued Museum bulletin 14 on the *Geology of Moriah and Westport Townships, Essex County*. Besides describing the general geology of these townships, this contribution to our knowledge of the magnetic iron-ore deposits of the United States discusses in detail the iron-ore bodies of that region, gives the latest information on its important iron-ore deposits and reviews the probable hypotheses as to their origin. It contains a geologic map of the two townships, a map of Mineville iron region, and half-tone views of the mining district and sections of the ore bodies. The bulletin is mailed postpaid to any address by the State Library on receipt of 10 cents. Bulletin 15 on the *Mineral Resources of New York*, by Dr. F. J. H. Merrill, director of the Museum, is nearly ready and will be mailed postpaid for 40 cents.

UNIVERSITY AND EDUCATIONAL NEWS.

GRADUATE SCHOLARSHIPS AND FELLOWSHIPS IN THE UNIVERSITY OF PENNSYLVANIA.

A LARGE number of Graduate Scholarships and Fellowships are about to be established in the University of Pennsylvania. Provost Harrison gave to the University last June, as stated at the time in this journal, the sum of \$500,000, to be held as a special fund, and to be known as the 'George L. Harrison Foundation for the Encouragement of Liberal Studies and the Advancement of Knowledge.' The purposes of the fund were described in the deed of gift as follows :

1. The establishment of Scholarships and Fellowships intended solely for men of exceptional ability.
2. The increasing of the Library of the University, particularly by the acquisition of works of permanent use and of lasting reference to and by the scholar.
3. The temporary relief from routine work of professors of ability in order that they may de-

vote themselves to some special and graduate work.

4. The securing men of distinction to lecture, and for a time to reside at the University.

These uses of the fund are not made absolutely binding upon the trustees for all time, but the donor expressed a desire to make the gift as flexible as possible in its application, recognizing the fact "that gifts to universities hemmed in too closely by restrictions are liable to lessen in value as time goes on."

In pursuance, however, of the end in view in the foundation, definite action has been taken in the establishment of a considerable number of Graduate Scholarships and Fellowships. The recommendations which were made regarding these have been approved and will now go into force. There are eight Graduate Scholarships giving free tuition and \$100 open to those coming from the liberal courses in the College of the University; and there are, with the Hector Tyndale Fellowship in Physics, now fifteen fellowships, fourteen of which, coming from this Foundation, are open to students of any university. The amount of the tuition deducted from the full value of the Fellowship (\$600) does not go into the general funds of the University, but may be used for the purchase of books or apparatus which will aid the student in his work, or may be used in the publication of theses.

A somewhat unusual feature is the establishment of Senior Fellowships, open only to those who have taken the Doctor's degree in the University of Pennsylvania. This amounts to the introduction, in a modified form, of the 'Docent' system of German universities, the object being not at all to use the Senior Fellow as a teacher for the sake of the value he may be to the University, but to test him and give him an opportunity to do a little teaching in the direct line of his special work. From the Senior Fellowships there is no reduction for tuition. This gives eight Graduate Scholarships, fifteen Fellowships and five Senior Fellowships, making twenty Fellowships in all. Fourteen of the Fellowships are open to men from other institutions, but the Senior Fellowships are limited to those having taken the Doctor's degree from the University in order

that some of the best men may be kept in residence here as long as possible, and their influence felt among the students.

The whole plan aims at building up a cultured group of men interested in the advancement of knowledge and who shall be in residence at the University. Probably most of them will live in the dormitories, and their influence will undoubtedly be for good in the institution. The whole time of every incumbent of a Fellowship or Scholarship must be given to his scholarly work at the University.

GENERAL.

MR. W. C. McDONALD, a tobacco manufacturer of Montreal, has given \$500,000 to McGill University for the purpose of providing a building for the study of chemistry, mining and architecture. This brings his gifts to this university up to \$2,000,000.

MR. F. C. MACAULEY, of Philadelphia, has bequeathed to the University of Pennsylvania his library, \$5,000 for the purchase of books relating to Dante and Tasso, and \$5,000 for archaeological researches in America. The bequest to take effect on the death of his brother.

THE name of the University of the City of New York has been changed to New York University by the Board of Regents.

DR. O. CONE has resigned the Presidency of Buchtel College.

PROF. EARL BARNES and Prof. Ewald Flügel, of Stanford University, and Prof. Bernard Moses, of the University of California, are each to deliver a series of fifty lectures at the University of Chicago during the spring term.

DISCUSSION AND CORRESPONDENCE.

CERTITUDES AND ILLUSIONS.

MAJOR POWELL, having escaped (but temporarily, I fear) from the metaphysicians, has courageously entered the camp of the physicists in his paper of March 20th. Now the latter, as a class, are proverbially a simple-minded people, given rather to 'Certitudes' than to 'Illusions' and, as a rule, especially anxious to know what they are talking about, when they talk. They have a distinct fondness for the use of words whose meaning is precise and not